

Claims:

1. A method for preparing at least one chemical reaction product by means of chemical reaction of one or more reactants, optionally dissolved in one or more solvents, which are supplied as a feed flow, through the contact with a heterogeneous catalyst in a continuously operated fixed-bed reactor packed with a particle bed, a continuous annular chromatograph (CAC), packed with said particle bed, being used as said fixed-bed reactor in which said at least one reaction product is formed and purified and said at least one purified reaction product as well as any by-products and/or unreacted reactants present are withdrawn from said annular chromatograph each at a different and predetermined rotational angle position, characterized in that only one type of particulate material in a single particle bed is used as both catalyst for the formation of said at least one reaction product in said particle bed and as chromatographic medium for the purification thereof.
2. The method according to claim 1, characterized in that any unreacted reactants and/or by-products are recirculated and reused in the chemical reaction.
3. The method according to claim 1 or 2, characterized in that said particulate material comprises a catalyst material which is uniformly distributed therein and/or thereon.
4. The method according to any one of claims 1 to 3, characterized in said the particulate material entirely consists of catalyst material.
5. The method according to any one of the preceding claims, characterized in that an ion exchange resin is packed as said particulate material.
6. The method according to any one of the preceding claims, characterized in that a zeolite is packed as said particulate material.

7. The method according to any one of the preceding claims, characterized in that said particle bed is heated and/or cooled during said reaction/purification.
8. The method according to any one of the preceding claims, characterized in that several zones of different temperatures are created by heating and/or cooling during said reaction/purification.
9. The method according to any one of the preceding claims, characterized in that a continuous temperature gradient is set by heating and/or cooling during said reaction/purification.
10. The method according to any one of the preceding claims, characterized in that at least one reactant is supplied in a solvent.
11. The method according to claim 10, characterized in that said solvent at the same time acts as eluent.
12. The method according to claim 10 or 11, characterized in that at least one of the reactants acts as solvent.
13. The method according to any one of the preceding claims, characterized in that at least one of the reactants supplied is a polyvalent reactant from which several different reaction products are formed during the reaction.
14. The method according to claim 13, characterized in that one of all possible reaction products is preferentially recovered by controlling the operating parameters.
15. The method according to claim 14, characterized in that it is substantially said one reaction product which is recovered.

16. The method according to any one of claims 1 to 15, characterized in that acetic acid and glycerol are supplied as reactants and triacetin is recovered as the preferred reaction product.

17. The method according to any one of claims 1 to 15, characterized in that phenol and acetone are supplied as reactants and bisphenol A is recovered as the preferred reaction product.

18. The method according to any one of claims 1 to 12, characterized in that acetic acid and methanol are supplied as reactants and methyl acetate is recovered as the preferred reaction product.